

REMARKS

Claims 30 and 32 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 21, 25 to 29, 35 and 39 were rejected under 35 U.S.C. §103(a) as being unpatentable over Leeson (U.S. 5,285,626) in view of Coffinberry (U.S. 5,143,329). Claims 21, 25 to 32, 35 and 39 were rejected under 35 U.S.C. §103(a) as being unpatentable over Schutze (U.S. 4,077,202) in view of Coffinberry and Lampe (U.S. 5,174,109). Claims 33 and 34 are allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims.

Claims 21, 29, 30 and 31 have been amended. New claims 40 and 41 have been added. Support for the new claims is found at paragraphs [0021], [0025], [0026] and [0028], for example.

Reconsideration of the application based on the following remarks is respectfully requested.

35 U.S.C. §112 Rejections

Claims 30 and 32 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite.

Claims 29 to 31 have been amended and claims 30 and 32 are submitted as including proper antecedent bases.

Withdrawal of the rejection of claims 30 and 32 is respectfully requested.

35 U.S.C. §103(a) Rejections

Claims 21, 25 to 29, 35 and 39 were rejected under 35 U.S.C. §103(a) as being unpatentable over Leeson (U.S. 5,285,626) in view of Coffinberry (U.S. 5,143,329).

Leeson discloses a drive for main engine auxiliaries for an aircraft gas turbine engine. A compressor section 20a of an engine 20 supplies high pressure gas to auxiliary turbines 31, 32 via controllers 35, 36. (Col. 5, Lines 21 to 38). In Fig. 2, a group 63, including a generator or alternator 71, is shown as being mechanically coupled to main engine 20 through gearbox 83. (Col. 8, Lines 22 to 24; Col. 6, Lines 21 to 26). Groups 62, 60 are driven by auxiliary turbines 31, 32 respectively and are therefore decoupled from group 63. (Col.8, Lines 30 to 35). Group 62 includes an electrical alternator 56. (Col. 5, Lines 57 to 64).

Coffinberry discloses “an environmental control system apparatus for an aircraft powered by a gas turbine engine is provided with an engine compressor bleed supply means and an energy recovery means for returning the required or unused amount of energy back to the engine.” (Col. 3, lines 61 to 65).

Claim 21, as amended, recites “[a] gas turbine, comprising
a core engine including a high pressure compressor and a shaft connected thereto for driving said high pressure compressor;
an electrical power generator connected to the shaft generating electrical power from the shaft, the electrical power generator further including an air turbine receiving compressed air drawn from the high pressure compressor to generate electrical power, the electrical power generator including a first generator connected to the shaft, the first generator generating electrical power from the mechanical shaft power drawn from the core engine via the shaft, the electrical power generator further including a second generator connected to an air turbine, the air turbine generating mechanical power from the compressed air, and the second generator capable of generating electrical power from the mechanical power generated by the air turbine or alternatively the mechanical shaft power drawn from the core engine via the shaft, the second generator capable of generating electrical power from mechanical power generated by the air turbine as the first generator generates electrical power from the mechanical shaft power drawn from the core engine via the shaft.”

Both Leeson and Coffinberry fail to teach or show “the second generator capable of generating electrical power from the mechanical power generated by the air turbine or alternatively the mechanical shaft power drawn from the core engine via the shaft, the second generator capable of generating electrical power from mechanical power generated by the air turbine as the first generator generates electrical power from the mechanical shaft power drawn from the core engine via the shaft,” as now recited in claim 21. Leeson discloses alternator 56 only being capable of generating electrical power from mechanical power generated by turbine 32 and thus does not disclose “the second generator capable of generating electrical power from the mechanical power generated by the air turbine or alternatively the mechanical shaft power drawn from the core engine via the shaft” as now required by claim 21. Also, Coffinberry does not cure this deficiency of Leeson because Coffinberry does not even disclose one electrical generator.

Withdrawal of the rejections of independent claim 21 and dependent claims 25, 26, 28, 29, 35 and 39 under 35 U.S.C. §103(a) is respectfully requested.

Claims 21, 25 to 32, 35 and 39 were rejected under 35 U.S.C. §103(a) as being unpatentable over Schutze (U.S. 4,077,202) in view of Coffinberry and Lampe (U.S. 5,174,109).

Coffinberry is described above.

Schutze discloses a system “for starting an aircraft engine and for driving auxiliary equipment which permits driving the auxiliary equipment prior to starting the engine.” (Col. 1, lines 45 to 47).

Lampe discloses “facilitating starting of turbines by disconnecting mechanical loads during turbine start-up by using clutches, and more particularly to facilitating starting of aircraft auxiliary power units (APU) by having clutches disconnect gearboxes that drive pumps and generators not required for APU turbine start-up.” (Col. 1, lines 6 to 12). The exemplary embodiment of an auxiliary power system “provides an accumulator 18 with hydraulic starter motor 20, a permanent magnet generator (PMG) 22 with electronic control unit 24, and a fuel control 26 all connected to the APU 12 through the gearbox 14 for starting the APU 12.” (Col. 3, Lines 14 to 19).

Claim 21, as amended, recites “[a] gas turbine, comprising
a core engine including a high pressure compressor and a shaft connected thereto for driving said high pressure compressor;

an electrical power generator connected to the shaft generating electrical power from the shaft, the electrical power generator further including an air turbine receiving compressed air drawn from the high pressure compressor to generate electrical power, the electrical power generator including a first generator connected to the shaft, the first generator generating electrical power from the mechanical shaft power drawn from the core engine via the shaft, the electrical power generator further including a second generator connected to an air turbine, the air turbine generating mechanical power from the compressed air, and the second generator capable of generating electrical power from the mechanical power generated by the air turbine or alternatively the mechanical shaft power drawn from the core engine via the shaft, the second generator capable of generating electrical power from mechanical power generated by the air turbine as the first generator generates electrical power from the mechanical shaft power drawn

from the core engine via the shaft.”

Schutze, Coffinberry and Lampe fail to teach or show “the second generator capable of generating electrical power from the mechanical power generated by the air turbine or alternatively the mechanical shaft power drawn from the core engine via the shaft, the second generator capable of generating electrical power from mechanical power generated by the air turbine as the first generator generates electrical power from the mechanical shaft power drawn from the core engine via the shaft,” as now recited in claim 21. Schutze discloses only one electrical generator 7, Coffinberry does not teach any electrical generators, and Lampe only discloses an APU 12, which is started by a PMG 22, driving only one generator 28.

Furthermore, it would not have been obvious to have modified Schutze in light of Coffinberry and Lampe, or the increase in aircraft electric demands since 1978, the date of Schutze, to include these limitations of claim 21. Schutze teaches “either the auxiliary machine means or the engine shaft (but not both) can drive the auxiliary equipment via the gear box” and thus specifically teaches away from “the second generator capable of generating electrical power from mechanical power generated by the air turbine as the first generator generates electrical power from the mechanical shaft power drawn from the core engine via the shaft” as now required by claim 21.

Withdrawal of the rejections of independent claim 21 and dependent claims 25 to 32, 35 and 39 under 35 U.S.C. §103(a) is respectfully requested.

Claim Objections

Claims 33 and 34 would be allowable if rewritten in independent form to include all the limitations of the base claims and any intervening claims.

In light of the discussion above, withdrawal of the objections to claims 33 and 34 is respectfully requested.

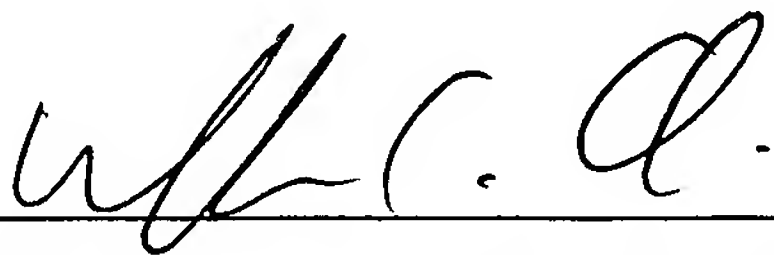
CONCLUSION

It is respectfully submitted that the application is in condition for allowance and applicants respectfully request such action.

If any additional fees are deemed to be due at this time, the Assistant Commissioner is authorized to charge payment of the same to Deposit Account No. 50-0552.

Respectfully submitted,

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